IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application: **Boubez et al.** §	
§	
§	
Serial No.: **09/758,112** §	Group Art Unit: **3624**
§	
Filed: **January 3, 2001** §	Examiner: **Hamilton, Lalita M.**
§	
For: **Apparatus and Method for** §	Attorney Docket No.: **RSW9-2000-0102-US1**
Categorizing Services Using §	
Canonical Service Descriptions §	
§	

Certificate of Mailing Under 37 C.F.R. § 1.8(a)

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By: _Amelia C. Turner_
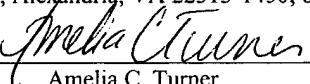
Amelia C. Turner

DECLARATION UNDER RULE 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Maryann Hondo, an inventor in the above-identified patent application, declare as follows:

1. I am an inventor of the above-identified patent application.

2. The invention as claimed in the above-identified application was conceived on or before March 7, 2000.

3. The invention as claimed in the above-identified application was workable/reduced to practice on or before March 7, 2000.

4. The attached disclosure was last modified on March 7, 2000.

The declarant further states that the above statements were made with knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

DATE: 3/24/05
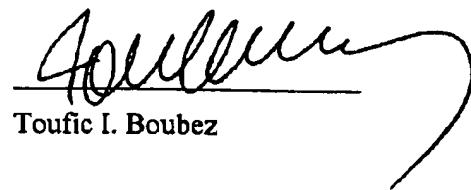
Toufic I. Boubez

Disclosure RSW8-2000-0041

Created By: Steve Graham **Created On:** 03/07/2000 07:45:02 AM
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Required fields are marked with the asterisk (*) and must be filled in to complete the form .

Summary

Status	Under Evaluation
Processing Location	RSW
Functional Area	Rod Smith/Java Tools
Attorney/Patent Professional	Gregory Doudnikoff/Raleigh/IBM
IDT Team	Steven Miller/Raleigh/IBM; Art Francis/Raleigh/IBM; David Kuehr-Mclaren/Raleigh/IBM; Allan K Edwards/Raleigh/IBM; Sandeep Singhal/Raleigh/IBM; Mark Peters/Raleigh/IBM; R Redpath/Raleigh/IBM; Scott Rich/Raleigh/IBM; Thom Haynes/Raleigh/IBM; Keith Purcell/Raleigh/IBM; Virinder Batra/Raleigh/IBM
Submitted Date	03/07/2000 07:58:08 AM
Owning Division	[Add/Change]
PVT Score	To calculate a PVT score, use the 'Calculate PVT' button.
Incentive Program	
Lab	
Technology Code	

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Response Due to IP&L : 04/06/2000

Main Idea

The Use of Canonical Service Descriptions in Taxonomies of eBusiness Services

Idea of disclosure
1. Describe your invention, stating the problem solved (if appropriate), and indicating the advantages of using the invention.

This invention disclosure pertains to Service Oriented Architectures (SOA), and in particular, the use of Canonical Service Descriptions in Taxonomies of eBusiness Services.

We begin by providing background information on Service Oriented Architectures and the world of eBusiness services. Given this background, we then discuss the invention: Canonical Service Descriptions.

Background

SOA

We believe we have isolated the necessary ingredients to make this world of eBusiness services a reality. It boils down to some fundamentally simple abstractions:

1.   Regard all network available functionality as an eBusiness service, encapsulate this behavior and define an API to it
•   Create eBusiness services by wrappering existing I/T application components or scripting together other eBusiness services in a workflow-style composition
2.   Describe the service using a ubiquitous, open standard, XML meta-data description format (Well Defined Services or WDS)
•   Describe the eBusiness service's API and location and categorize the "kind" or category of service it is
•   Describe the prerequisites to service access (authentication, billing, etc.)
•   Describe other aspects of the service (privacy policy, quality of service guarantees, etc.)
3.   Services are accessed based on an open standards-based protocol (eBusiness Services Protocol, eSP) layered on http and XML messaging. This protocol supports dynamic discovery of eBusiness services, negotiation of the prerequisites to access and invocation of the eBusiness services' API.

The architectural relationships between the network entities in SOA are quite simple:
1.   There are three roles a network component can play: service provider, service requestor, service broker
2.   There are three operations: publish, find and bind.
3.   The three operations involve WDS documents and are based on the eSP.

The following diagram illustrates the 3 roles, 3 operations in a SOA architecture:
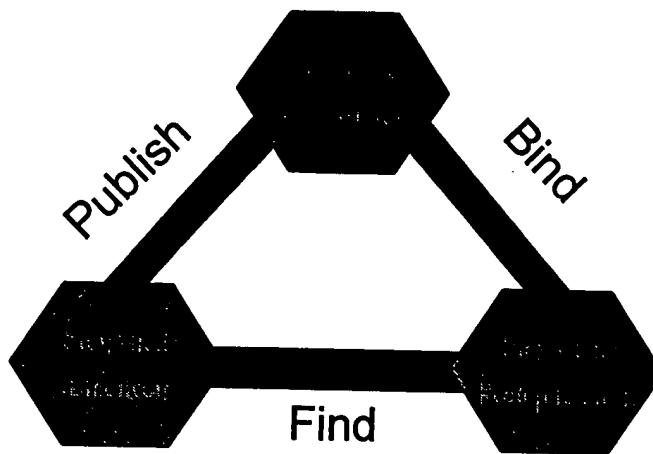
1.   A service provider publishes a WDS document describing its eBusiness service to one or more service brokers.

2.   A service requestor (e.g. another eBusiness service that requires a particular kind of service) invokes the find operation on a service broker to discover which services are available matching requirements stated in a WDS template. The result of the find operation is a WDS document for each eBusiness service that met the criteria posed in the find operation.

3.   The service requestor negotiates access to the eBusiness service with the service provider and binds to (invokes) the service.

World of eBusiness Services

The result of this paradigm shift to eBusiness services will be a world in which the World Wide Web contains thousands and thousands of eBusiness services. Applications will be built by composing existing eBusiness services to produce higher-level eBusiness services.

Innovation, in terms of technical and business models, using eBusiness services composition will be faster and cheaper than building new applications and business processes from scratch. This is particularly true if the business model requires intimate integration with suppliers or customers. Speed in innovation in the new economy is critical. Speed to innovation on the web is critical. New business models build fortunes.. The new economy rewards first mover. Quicker a business can react to newly available eBusiness services, the quicker they can react to competitive opportunities/threats, the more successful they will be in the Internet economy.

eBusiness Services value proposition

In summary, the value proposition of eBusiness Services to a business is that the approach:
*   Maximizes reach to customers,
*   Increases choice of suppliers/partners,
*   Increases flexibility of business processes,
*   and increases speed of execution
*   while minimizing development and deployment cost and time to market for new eBusiness functionality.

This yields a single technical strategy: start with existing eBusiness applications, decouple, encapsulate, then reintegrate them into eBusiness Services. This provides the necessary flexibility and adaptability of eBusiness Systems to compete in emerging eMarketplaces.

Canonical Service Descriptions

Refer to a previous disclosure: A mechanism for categorizing eBusiness Services. This other disclosure describes the categorization mechanism for eBusiness services. This invention refers to the role of the Canonical Service Description (a meta data mechanism) within this categorization scheme.

Role of the canonical service description:

- The canonical service description for each category should be related to that of the category one level up. But the semantics of a given service may have to differ from the next level up in important ways. That is, a specialization of a service at the next level down in the hierarchy may implement the same verb, but do so in a very different way with different argument characteristics and different returned results.
- The canonical service description for each category must include an executable test harness, described in XML, by which it can be objectively and automatically determined that a service satisfies the requirements for being included in that category. Security constraints on some services may require that the taxonomy server be given special certificates or other certification information as a part of registration so that it can execute the tests. In situations that call for extreme security, authentication, or encryption, the taxonomy server may only receive exceptions in response to the tests. Even in that case, though, it should receive the correct exceptions, i.e., the exception received should indicate that the service is present but not responding due to inadequate authentication. The conflict between testability and security is not likely to be sever with general purpose taxonomy servers. Highly secure services are likely to be registered with special purpose taxonomy servers that themselves are secure and have special purpose mechanisms for testing.
- A naming convention for the categories of services should be specifiable in a natural language neutral form that is unambiguous, perhaps analogous to numeric IP addresses or to the Dewey Decimal system used in categorizing books in research libraries.
- Services must be able to be registered in multiple categories, although in that case the service must be able to function correctly in each of those categories.
- The taxonomy server must provide a well defined way for new services to be registered within a species as well as for species to be created, removed, recategorized, etc. The registration of a particular service in a particular category must provide some guarantee that the service conforms both syntactically and semantically to the description of the category.

2. How does the invention solve the problem or achieve an advantage,(a description of "the invention", including figures inline as appropriate)?
- The canonical service description provides the place where the standard API (or APIs, one for each style of language binding e.g. perl, Java, SOAP, etc.) is standardized
- The CSD provides the place where the test cases required to verify conformance to category are established. If a service implementation claims to belong to a given category, then it must successfully pass all of these test cases to claim conformance.
- The CSD provides a place where designers can review meta-data about the category of service meant for a human readable audience. For example, deeper documentation and description of the purpose of the service.

The Canonical service description forms the basis to solve the "semantics" problem. That is, at design time, the Canonical Service Description provides the information which allows the designer of an eBusiness Service to examine a large range of eBusiness Service categories and determine which category best matches the requirements needed by the designer.

3. If the same advantage or problem has been identified by others (inside/outside IBM), how have those others solved it and does your solution differ and why is it better?
No other service-based or service oriented architecture that we have come across addresses the notion of categorization, let alone associate it with a canonical service description.

4. If the invention is implemented in a product or prototype, include technical details, purpose, disclosure details to others and the date of that implementation.

This item is explained with great depth in the "Tao of eBusiness Services" by Steve Burbeck. Further information about the Service Oriented Architectures project is available from any of the co-inventors.

This information will be disclosed to the public on 03/27/00.

*Critical Questions (Questions 1 - 7 must be answered)

*Question 1
On what date was the invention workable? 01/10/2000 **Please format the date as MM/DD/YYYY**
(Workable means i.e. when you know that your design will solve the problem)